

## WEST Search History

DATE: Friday, September 26, 2003

<u>Set Name</u> side by side	<u>Query</u>	<u>Hit Count</u>	<u>Set Name</u> result set
<i>DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ</i>			
L11	l9 and L10	160	L11
L10	density or dense or densify	1160908	L10
L9	l6 and L8	367	L9
L8	pressur\$8 same temperature	732414	L8
L7	pressur\$8 and L6	424	L7
L6	l1 same l2 same l3	578	L6
L5	pressur\$8 and L4	1054	L5
L4	l1 and l2 and L3	1495	L4
L3	ru or ruthenium or srruo?sub.3 or ruthenate	672622	L3
L2	sr or strontium or srruo?sub.3	171916	L2
L1	perovskit\$4	13958	L1

END OF SEARCH HISTORY

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(FILE 'HOME' ENTERED AT 10:30:03 ON 26 SEP 2003)

FILE 'CAPLUS' ENTERED AT 10:30:24 ON 26 SEP 2003

L1	29555 S PEROVSKIT?
L2	46165 S PRESS? WITH TEMP?
L3	358 S L1 AND L2
L4	431180 S DENS?
L5	35 S L3 AND L4
L6	54 S DENS? WITH PEROVSKIT?
L7	323 S L3 NOT L5
L8	323 S L7 NOT L6

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(FILE 'HOME' ENTERED AT 09:37:18 ON 26 SEP 2003)

FILE 'CAPLUS' ENTERED AT 09:38:29 ON 26 SEP 2003

L1 29555 S PEROVSKIT?  
L2 418308 S PRESS? AND TEMP?  
L3 46165 S PRESS? WITH TEMP?  
L4 358 S L3 AND L1  
L5 431180 S DENS?  
L6 35 S L4 AND L5  
L7 54 S DENS? WITH PEROVSKIT?

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L6 ANSWER 1 OF 35 CAPLUS COPYRIGHT 2003 ACS on STN  
AN 2003:133753 CAPLUS  
DN 138:157627

TI High pressure sintering of ruthenium-based **perovskites** for improved **densification** and minimized crystal growth

IN Vagarali, Suresh S.; Lucek, John W.

PA USA

SO U.S. Pat. Appl. Publ., 4 pp.

CODEN: USXXCO

DT Patent

LA English

IC ICM C04B033-32

ICS C04B035-01

NCL 264681000; 423420200; 423593000

CC 57-2 (Ceramics)

Section cross-reference(s): 56, 77

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003034591	A1	20030220	US 2001-931312	20010816
PRAI	US 2001-931312		20010816		

AB A **perovskite** feedstock (such as RuSrO<sub>3</sub> powders or preforms) is placed in a high-pressure cell (with graphite or NaCl pressure-transmitting media) of a high **pressure**/high **temp.** app. and subjected to pressures .gtorsim.2 kbar and temps. .gtorsim.800.degree.. for a time adequate to increase the d. of the preform. The sintering under pressure allows for lower temps. and minimizes grain growth.

ST pressure sintering **density** ruthenium strontium

**perovskite** crystal growth

IT **Perovskite**-type crystals

(d. of; high pressure sintering of ruthenium-based **perovskites** for improved **densification** and minimized crystal growth)

IT Apparatus

(high-**pressure**/high-**temp.**; high pressure sintering of ruthenium-based **perovskites** for improved **densification** and minimized crystal growth)

IT Sintering

(hot pressing; high pressure sintering of ruthenium-based **perovskites** for improved **densification** and minimized crystal growth)

IT Crystal growth

(**perovskite**-type; high pressure sintering of ruthenium-based **perovskites** for improved **densification** and minimized crystal growth)

IT Crystallization

(pressure-induced; high pressure sintering of ruthenium-based **perovskites** for improved **densification** and minimized crystal growth)

IT 7439-98-7, Molybdenum, uses

RL: NUU (Other use, unclassified); USES (Uses)

(foil; high pressure sintering of ruthenium-based **perovskites** for improved **densification** and minimized crystal growth)

IT 12169-14-1, Ruthenium strontium oxide (RuSrO<sub>3</sub>)

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)

(**perovskite**, ferromagnets; high pressure sintering of ruthenium-based **perovskites** for improved **densification** and minimized crystal growth)

IT 7647-14-5, Sodium chloride, uses 7782-42-5, Graphite, uses

RL: NUU (Other use, unclassified); USES (Uses)

(pressure-transmitting media; high pressure sintering of

Applicants

ruthenium-based **perovskites** for improved  
**densification** and minimized crystal growth)

L6 ANSWER 14 OF 35 CAPLUS COPYRIGHT 2003 ACS on STN  
 AN 1998:540829 CAPLUS  
 DN 129:278608  
 TI Elasticity of CaTiO<sub>3</sub>-CaSiO<sub>3</sub> **perovskites**  
 AU Sinelnikov, Yegor D.; Chen, Ganglin; Liebermann, Robert C.  
 CS Center of High Pressure Research and Department of Earth and Space  
 Sciences, State University of New York at Stony Brook, Stony Brook, NY,  
 11794, USA  
 SO Physics and Chemistry of Minerals (1998), 25(7), 515-521  
 CODEN: PCMIDU; ISSN: 0342-1791  
 PB Springer-Verlag  
 DT Journal  
 LA English  
 CC 53-3 (Mineralogical and Geological Chemistry)  
 AB Polycryst. specimens in the CaTiO<sub>3</sub>-CaSiO<sub>3</sub> **perovskite** system have  
 been hot-pressed in a 2000-ton uniaxial split-sphere app. (USSA-2000) at  
 pressures up to 15 GPa and temp. of 1550.degree.C, for the compns. CaTiO<sub>3</sub>,  
 Ca(Ti<sub>0.75</sub>Si<sub>0.25</sub>)O<sub>3</sub>, Ca(Ti<sub>0.5</sub>Si<sub>0.5</sub>)O<sub>3</sub>. For the specimens with the bulk  
**densities** within 1% of the X-ray d., compressional and shear wave  
 velocity measurements have been conducted using ultrasonic interferometry.  
 The measured adiabatic bulk moduli (K<sub>s</sub>) for the CaTiO<sub>3</sub> and  
 Ca(Ti<sub>0.5</sub>Si<sub>0.5</sub>)O<sub>3</sub> **perovskites** are 175(1) and 188(1) GPa and shear  
 moduli (G) of 106(1) and 109(1) GPa. In situ X-ray diffraction studies at  
 high **pressure** and **temp.** resulted in isothermal values  
 for K<sub>0</sub> of 170(5) and 185(5) GPa, resp. For the unquenchable CaSiO<sub>3</sub>  
**perovskite**, elasticity theory and systematics were used to predict  
 K<sub>0</sub>=212(7) GPa and G<sub>0</sub>=112(5) GPa; this shear modulus is 37% less than that  
 for (Mg,Fe)SiO<sub>3</sub> **perovskite**, suggesting that CaSiO<sub>3</sub>  
**perovskite** cannot be ignored in modeling the compn. of the Earth's  
 lower mantle.  
 ST lower mantle calcium silicate titanate elasticity; **perovskite**  
 silicate elasticity lower mantle model  
 IT Elasticity  
 Simulation and Modeling, physicochemical  
 Young's modulus  
 (lower mantle-modeling implications of the elastic modulus for phases  
 of the **perovskite**-structured solid-soln. series  
 CaTiO<sub>3</sub>-CaSiO<sub>3</sub>)  
 IT Mantle (earth)  
 (lower mantle; lower mantle-modeling implications of the elastic  
 modulus for phases of the **perovskite**-structured solid-soln.  
 series CaTiO<sub>3</sub>-CaSiO<sub>3</sub>)  
 IT **Perovskite**-type crystals  
 (of CaTiO<sub>3</sub>-CaSiO<sub>3</sub> solid-soln. series; lower mantle-modeling  
 implications of the elastic modulus for phases of the  
**perovskite**-structured solid-soln. series CaTiO<sub>3</sub>-CaSiO<sub>3</sub>)  
 IT 12049-50-2, Calcium titanium oxide (CaTiO<sub>3</sub>)  
 RL: GPR (Geological or astronomical process); PRP (Properties); PROC  
 (Process)  
 (lower mantle-modeling implications of the elastic modulus for phases  
 of the **perovskite**-structured solid-soln. series  
 CaTiO<sub>3</sub>-CaSiO<sub>3</sub>)  
 IT 10101-39-0, Silicic acid (H<sub>2</sub>SiO<sub>3</sub>), calcium salt (1:1) 12194-71-7,  
**Perovskite** 192707-00-9, Calcium titanium silicate (Ca<sub>2</sub>TiSiO<sub>6</sub>)  
 198972-70-2, Calcium titanium oxide silicate (CaTi<sub>0.75</sub>O<sub>2</sub>(SiO<sub>4</sub>)<sub>0.25</sub>)  
 RL: GPR (Geological or astronomical process); PRP (Properties); PROC  
 (Process)  
 (**perovskite**-structured, elastic modulus of; lower  
 mantle-modeling implications of the elastic modulus for phases of the  
**perovskite**-structured solid-soln. series CaTiO<sub>3</sub>-CaSiO<sub>3</sub>)  
 RE.CNT 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 RE

L6 ANSWER 24 OF 35 CAPLUS COPYRIGHT 2003 ACS on STN  
 AN 1992:536222 CAPLUS  
 DN 117:136222  
 TI Preparation of high-**density perovskite**-type lanthanum  
 nickel trioxide by using hot isostatic pressing (HIP)  
 AU Kamata, Kiichiro; Ohshio, Shigeo; Tanaka, Kiyoshi; Kawai, Koh; Yamada,  
 Tomoo; Nishino, Junichi  
 CS Dep. Chem., Nagaoka Univ. Technol., Nagaoka, 940-21, Japan  
 SO Nippon Seramikkusu Kyokai Gakujutsu Ronbunshi (1992), 100(July), 972-4  
 CODEN: NSKRE2; ISSN: 0914-5400  
 DT Journal  
 LA Japanese  
 CC 57-2 (Ceramics)  
 Section cross-reference(s): 76  
 AB **Dense** sintered bodies of **perovskite**-type  $\text{LaNiO}_3$ , which  
 shows metallic conduction, were prep'd. by HIP without flux such as  $\text{Na}_2\text{CO}_3$ .  
 A stoichiometric mixt. of  $\text{La}_2\text{O}_3$  and  $\text{NiO}$  was precalcined in air at  
 900.degree. for 5 h. The ground sample was then sintered at 1100 or  
 1300.degree. in air for 20 h. The sintered bodies were composed of  
 $\text{La}_2\text{NiO}_4$  and  $\text{NiO}$  and had d. .ltoreq.95%. Single-phase **perovskite**  
 -type  $\text{LaNiO}_3$  of d. 95% was obtained from its presintered body by HIP under  
 101 MPa (in Ar gas contg. 20% O) at 1400.degree. for 2 h. A very low  
 resistivity of 2.2 .times.  $10^{-6}$  .OMEGA. m was measured for this  
 hot-isostatically pressed body of  $\text{LaNiO}_3$ . The stability region for the  
**perovskite**-type  $\text{LaNiO}_3$  in the **pressure-temp.**  
 diagram is discussed.  
 ST lanthanum nickel oxide **perovskite** prepn; hot isostatic pressing  
 lanthanum nickel oxide  
 IT Ceramic materials and wares  
 (lanthanum nickel oxide, prepn. of, by hot isostatic pressing)  
 IT Electric resistance  
 (of lanthanum nickel oxide ceramics, prepn. condition effect on)  
 IT Sintering  
 (hot isostatic pressing, of lanthanum nickel oxide, phase compn. and  
 elec. resistance in relation to)  
 IT 12031-18-4P, Lanthanum nickel oxide ( $\text{LaNiO}_3$ )  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (**perovskite**-type, ceramics, prepn. of, by hot isostatic  
 pressing)

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09/931,312

L7 ANSWER 30 OF 54 CAPLUS COPYRIGHT 2003 ACS on STN  
AN 1996:93261 CAPLUS  
DN 124:183397  
TI Enhanced **densification** of **perovskite**-type strontium  
titanate ceramics  
AU Liu, Kuo-Shung; Lin, I-Nan  
CS Department Materials Science and Engineering, National Tsing-Hua  
University, Hsinchu, 30043, Taiwan  
SO ISAF '94, Proceedings of the IEEE International Symposium on Applications  
of Ferroelectrics, 9th, University Park, Pa., Aug. 7-10, 1994 (1994),  
261-4. Editor(s): Pandey, R. K.; Liu, Michael; Safari, Ahmad. Publisher:  
Institute of Electrical and Electronics Engineers, New York, N. Y.  
CODEN: 62GYAM  
DT Conference  
LA English  
CC 57-2. (Ceramics)  
AB The densification of SrTiO<sub>3</sub> materials was enhanced by novel sintering  
method. On the other hand, hot isostatic pressing and microwave sintering  
may markedly enhance diffusion of ions such that the undesirable features  
of mixed oxide powders are easily overcome and the materials well  
sintered. Densification of the materials has already started when  
microwave-sintering at 1220.degree., but crystal growth occurs only at  
1250.degree.. Migration of grain boundaries can be effectively triggered  
by applying a short temp. pulse at the onset of the densification process.  
ST sintering strontium titanate dielec ceramic; titania strontium carbonate  
sintering ceramic; ferroelec perovskite crystal ceramic  
IT Perovskite-type crystals  
(enhanced **densification** of **perovskite**-type  
strontium titanate ceramics)  
IT Ferroelectric substances  
(ceramic, enhanced **densification** of **perovskite**-type  
strontium titanate ceramics)  
IT Sintering  
(hot isostatic pressing, enhanced **densification** of  
**perovskite**-type strontium titanate ceramics)  
IT Sintering  
(microwave, enhanced **densification** of **perovskite**  
-type strontium titanate ceramics).  
IT 1633-05-2, Strontium carbonate 12060-59-2, Strontium titanate  
13463-67-7, Titania, processes  
RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(enhanced **densification** of **perovskite**-type  
strontium titanate ceramics)

8 ANSWER 46 OF 323 CAPLUS COPYRIGHT 2003 ACS on STN  
 AN 2001:99813 CAPLUS  
 DN 134:289360  
 TI Valence variations in titanium-based **perovskite** oxides by  
 high-pressure and high-temperature method  
 AU Li, Liping; Li, Guangshe; Miao, Jipeng; Su, Wenhui; Inomata, Hiroshi  
 CS Department of Physics, Jilin University, Changchun, 130023, Peop. Rep.  
 China  
 SO Journal of Materials Research (2001), 16(2), 417-424  
 CODEN: JMREEE; ISSN: 0884-2914  
 PB Materials Research Society  
 DT Journal  
 LA English  
 CC 78-2 (Inorganic Chemicals and Reactions)  
 Section cross-reference(s): 73, 75  
 AB Typical Ti-based **perovskite** oxides  $\text{Eu}_{1-x}\text{Ba}_x\text{TiO}_3$  ( $x = 0.6-0.8$ ),  
 $\text{Eu}_{1-x}\text{K}_x\text{TiO}_3$  ( $x = 0.2, 0.32$ ), and  $\text{La}_{0.7}(\text{M})_{0.3}\text{TiO}_3$  ( $\text{M} = \text{Na}, \text{K}$ ) were  
 synthesized by high **pressure** and **temp.** using  $\text{RE}_2\text{O}_3$  ( $\text{RE}$   
 $= \text{La}, \text{Eu}$ ),  $\text{TiO}_2$ , alk., or alk. earth carbonates as the starting materials.  
 X-ray diffraction data anal. showed that there was a structural  
 transformation in  $\text{Eu}_{1-x}\text{Ba}_x\text{TiO}_3$  by varying Ba content [i.e., from cubic ( $x$   
 $= 0.6, 0.7$ ) to tetragonal ( $x = 0.8$ )], and that samples  $\text{Eu}_{1-x}\text{K}_x\text{TiO}_3$  and  
 $\text{La}_{0.7}(\text{M})_{0.3}\text{TiO}_3$  crystd. in the cubic **perovskite** structure.  
 151Eu Mossbauer spectroscopy and ESR measurements revealed mixed valence  
 of  $\text{Eu}^{2+}/\text{Eu}^{3+}$  in samples  $\text{Eu}_{1-x}\text{Ba}_x\text{TiO}_3$  and  $\text{Eu}_{1-x}\text{K}_x\text{TiO}_3$ , while Ti ions were  
 present in pure  $\text{Ti}^{4+}$  state. Cubic  $\text{Eu}_{1-x}\text{K}_x\text{TiO}_3$  was metastable, which  
 decompd. into a mixt. of **perovskite** and pyrochlore phases at  
 high temps. as accompanied by an oxidn. process from  $\text{Eu}^{2+}$  to  $\text{Eu}^{3+}$ . For  
 samples  $\text{La}_{0.7}(\text{M})_{0.3}\text{TiO}_3$ ,  $\text{Ti}^{3+}$  signals were clearly obsd. The redn.  
 mechanisms for Eu ions at A site and Ti ions at B site in the  
**perovskite** oxides are discussed in terms of the chem. nature of  
 the framework ions and substitution ions under high **pressure** and  
**temp.**  
 ST mixed valence quaternary titanium oxide **perovskite** prepn;  
 pressure effect valence quaternary titanium oxide **perovskite**;  
 temp effect valence quaternary titanium oxide **perovskite**;  
 crystal structure quaternary titanium oxide **perovskite**;  
 Moessbauer europium 151 quaternary titanium oxide **perovskite**  
 IT Mossbauer effect  
 (europium-151; in barium europium titanium oxide **perovskites**)  
 IT Pressure  
 (high; valence variations in titanium-based **perovskite** oxides  
 by high-pressure and high-temp. method)  
 IT Crystal structure  
 (of quaternary titanium oxide **perovskites** from XRD data)  
 IT Mixed valence  
 (valence variations in titanium-based **perovskite** oxides by  
 high-pressure and high-temp. method)  
 IT 513-77-9, Barium carbonate  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (for prepn. of quaternary barium europium titanium oxide  
**perovskites** by high-pressure and high-temp. method)  
 IT 1308-96-9, Europium oxide ( $\text{Eu}_2\text{O}_3$ )  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (for prepn. of quaternary europium barium/potassium titanium oxide  
**perovskite** by high-pressure and high-temp. method)  
 IT 1312-81-8, Lanthanum oxide ( $\text{La}_2\text{O}_3$ )  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (for prepn. of quaternary lithium/potassium lanthanum titanium oxide  
**perovskites** by high-pressure and high-temp. method)  
 IT 298-14-6  
 RL: RCT (Reactant); RACT (Reactant or reagent)

- (for prepn. of quaternary potassium rare earth titanium oxide **perovskite** by high-pressure and high-temp. method)
- IT 144-55-8, Sodium hydrogen carbonate, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(for prepn. of quaternary sodium lanthanum titanium oxide **perovskite** by high-pressure and high-temp. method)
- IT 13463-67-7, Titanium dioxide, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(for prepn. of quaternary titanium-based oxide **perovskites** by high-pressure and high-temp. method)
- IT 272766-29-7P, Europium potassium titanium oxide (Eu<sub>0.8</sub>K<sub>0.2</sub>TiO<sub>3</sub>)  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(high-**pressure** and -**temp.** prepn., crystal structure lattice parameters, ESR, and europium-151 Moessbauer of)
- IT 152857-48-2P, Lanthanum sodium titanium oxide (La<sub>0.7</sub>Na<sub>0.3</sub>TiO<sub>3</sub>)  
152857-52-8P, Lanthanum potassium titanium oxide (La<sub>0.7</sub>K<sub>0.3</sub>TiO<sub>3</sub>)  
212179-79-8P, Barium europium titanium oxide (Ba<sub>0.8</sub>Eu<sub>0.2</sub>TiO<sub>3</sub>)  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(high-**pressure** and -**temp.** prepn., crystal structure lattice parameters, and ESR of)
- IT 212179-80-1P, Barium europium titanium oxide (Ba<sub>0.7</sub>Eu<sub>0.3</sub>TiO<sub>3</sub>)  
212179-81-2P, Barium europium titanium oxide (Ba<sub>0.6</sub>Eu<sub>0.4</sub>TiO<sub>3</sub>)  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(high-**pressure** and -**temp.** prepn., crystal structure lattice parameters, and europium-151 Moessbauer of)
- IT 272766-30-0P, Europium potassium titanium oxide (Eu<sub>0.68</sub>K<sub>0.32</sub>TiO<sub>3</sub>)  
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(high-**pressure** and -**temp.** prepn., crystal structure lattice parameters, thermal decompn., ESR, and europium-151 Moessbauer of)
- IT 272766-30-0DP, Europium potassium titanium oxide (Eu<sub>0.68</sub>K<sub>0.32</sub>TiO<sub>3</sub>), reaction products from sintering  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(prepn., XRD, and europium-151 Moessbauer of **perovskite** and pyrochlore phases)
- IT 14378-48-4, Europium-151, properties  
RL: PRP (Properties)  
(<sup>151</sup>Eu Moessbauer spectra of quaternary barium/potassium europium titanium oxide **perovskites**)

RE.CNT 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L8 ANSWER 48 OF 323 CAPLUS COPYRIGHT 2003 ACS on STN  
 AN 2001:72032 CAPLUS  
 DN 134:347503  
 TI High pressure synthesis and crystal structure of a new Ni(III)  
**perovskite**: TlNiO<sub>3</sub>  
 AU Kim, Seung-Joo; Demazeau, Gerard; Alonso, Jose A.; Choy, Jin-Ho  
 CS UPR-CNRS 9048, Institut de Chimie de la Matiere Condensee de Bordeaux  
 (ICMCB), Pessac, 33608, Fr.  
 SO Journal of Materials Chemistry (2001), 11(2), 487-492  
 CODEN: JMACEP; ISSN: 0959-9428  
 PB Royal Society of Chemistry  
 DT Journal  
 LA English  
 CC 78-2 (Inorganic Chemicals and Reactions)  
 Section cross-reference(s): 75, 77  
 AB A new Ni(III) compd., TlNiO<sub>3</sub> was prep'd. under high oxygen pressure. The  
**pressure** and **temp.** domain required to prep. pure TlNiO<sub>3</sub>  
 is very narrow (P .gtoreq. 7.5 GPa, 650 .ltoreq. T .ltoreq. 700.degree.).  
 TlNiO<sub>3</sub> crystallizes in the GdFeO<sub>3</sub>-type **perovskite** structure with  
 the following lattice parameters: a 5.2549(1), b 5.3677(1) and c 7.5620(2)  
 .ANG.. The corresponding unit cell vol. of 213.3 .ANG.<sup>3</sup> is somewhat  
 larger than the value expected from a plot of unit cell vol. vs. ionic  
 radius of the A cation for the analogous ANiO<sub>3</sub> series (A = rare earth  
 metal or yttrium). According to the structural anal., the twelve Tl-O  
 bonds in TlNiO<sub>3</sub> can be classified into three approx. groups (four short,  
 four medium and four long distances), while, in the other ANiO<sub>3</sub> compds.,  
 the A-O bonds are divided into two groups of eight short and four long  
 distances. The large unit cell vol. of TlNiO<sub>3</sub> is surely due to the  
 different coordination of the Tl(III) ion in the **perovskite**  
 lattice. The av. Ni-O-Ni bond angle (147.6.degree.) in TlNiO<sub>3</sub> is very  
 similar to that obsd. in YNiO<sub>3</sub> (147.3.degree.). However, the Neel temp.  
 (TN = 105 K) in antiferromagnetic TlNiO<sub>3</sub> is significantly lower than that  
 obsd. in YNiO<sub>3</sub> (TN = 145 K), which has a comparable Ni-O-Ni angle. The  
 magnetic properties could be explained by the competing effect of the  
 Tl(III)-O bond on the covalency of Ni(III)-O bond.  
 ST nickel thallium oxide **perovskite** prepn structure magnetic  
 property; crystal structure nickel thallium oxide **perovskite**  
 IT Crystal structure  
 Molecular structure  
 (of nickel(III) thallium(III) oxide **perovskite** (TlNiO<sub>3</sub>))  
 IT Antiferromagnetic exchange  
 Exchange interaction  
 Magnetic susceptibility  
 Neel temperature  
 Thermal decomposition  
 (prepn., crystal structure, thermal decompn. and magnetic properties of  
 nickel(III) thallium(III) oxide **perovskite** (TlNiO<sub>3</sub>))  
 IT Paramagnetism  
 (temp. independent; prepn., crystal structure, thermal decompn. and  
 magnetic properties of nickel(III) thallium(III) oxide  
**perovskite** (TlNiO<sub>3</sub>))  
 IT 12533-99-2P, Nickel thallium oxide (NiTlO<sub>3</sub>)  
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (prepn., crystal structure, thermal decompn. and magnetic properties of  
 nickel(III) thallium(III) oxide **perovskite** (TlNiO<sub>3</sub>))  
 IT 1314-32-5, Thallium(III) oxide 12054-48-7, Nickel(II) hydroxide  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reactant for prepn. of nickel(III) thallium(III) oxide  
**perovskite** (TlNiO<sub>3</sub>))  
 RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 RE

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L8 ANSWER 72 OF 323 CAPLUS COPYRIGHT 2003 ACS on STN  
 AN 1999:806487 CAPLUS  
 DN 132:110086  
 TI High-**pressure** and -**temperature** synthesis and  
 characterization of mixed valence **perovskite** oxides  $\text{LaTi}_{1-x}\text{Mg}_x\text{O}_3$   
 AU Miao, J. -P.; Li, L. -P.; Song, Y. -B.; Xu, D. -P.; Lu, Z.; Su, W. -H.  
 CS Northeast Normal University and Department of Physics, Institute of  
 Theoretical Physics, Jilin University, Changchun, Peop. Rep. China  
 SO Materials Chemistry and Physics (2000), 62(3), 226-229  
 CODEN: MCHPDR; ISSN: 0254-0584  
 PB Elsevier Science S.A.  
 DT Journal  
 LA English  
 CC 49-4 (Industrial Inorganic Chemicals)  
 AB **Perovskite** oxides  $\text{LaTi}_{1-x}\text{Mg}_x\text{O}_3$  ( $x = 0.25, 0.5$ ) were synthesized  
 using high-**pressure** and -**temp.** method.  
 $\text{LaTi}_{0.75}\text{Mg}_{0.25}\text{O}_3$  is a new compd. This new synthesis route has some  
 advantages. XRD anal. showed that the  $x = 0.25$  sample belongs to cubic  
**perovskite**-type structure and the  $x = 0.5$  sample belongs to  
 orthorhombic **perovskite**-type structure. EPR measurement  
 indicated that Ti ions were in mixed valence state of +3 and +4. IR  
 measurement indicated that the vibration frequency and width of BO<sub>6</sub>  
 octahedron stretching vibration absorption band decreases with the  
 increasing of  $x$ . The valence state of Ti ions can be altered by high-  
**pressure** and -**temp.**  
 ST high **pressure temp** synthesis characterization mixed  
 valence **perovskite** oxide  
 IT 12056-93-8P, Lanthanum magnesium titanium oxide ( $\text{La}_2\text{MgTiO}_6$ )  
 255916-99-5P, Lanthanum magnesium titanium oxide ( $\text{LaMg}_{0.25}\text{Ti}_{0.75}\text{O}_3$ )  
 RL: PNU (Preparation, unclassified); PREP (Preparation)  
 (high-**pressure** and -**temp.** synthesis and  
 characterization of mixed valence **perovskite** oxides)  
 IT 12194-71-7P, **Perovskite**  
 RL: PNU (Preparation, unclassified); PREP (Preparation)  
 (mixed oxides of type of; high-**pressure** and -**temp.**  
 synthesis and characterization of mixed valence **perovskite**  
 oxides)  
 RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 RE  
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 (2) Liu, X; J Alloys Compounds 1995, V223, PL7 CAPLUS  
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 (5) Su, W; Acta Sci Nat Univer Jilinensis 1992, Suppl, P188  
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 (8) Zhao, X; J Alloys Compounds 1995, V249, P247

L8 ANSWER 81 OF 323 CAPLUS COPYRIGHT 2003 ACS on STN  
 AN 1999:364928 CAPLUS  
 DN 131:95831  
 TI Synthesis, structure and dielectric properties of Na<sub>2</sub>SnTeO<sub>6</sub>  
 AU Park, J.-H.; Woodward, P. M.; Parise, J. B.; Lubomirsky, I.; Stafsudd, O.  
 CS CHiPR, Dept. of Chemistry SUNY, Stony Brook, NY, 11794-2100, USA  
 SO Materials Research Society Symposium Proceedings (1999), 547(Solid-State Chemistry of Inorganic Materials II), 139-144  
 CODEN: MRSPDH; ISSN: 0272-9172  
 PB Materials Research Society  
 DT Journal  
 LA English  
 CC 76-9 (Electric Phenomena)  
 Section cross-reference(s): 75  
 AB A new **perovskite** was recovered from the high **pressure** -high **temp.** treatment of the .alpha.-TlSbO<sub>3</sub> form of Na<sub>2</sub>SnTeO<sub>6</sub> at 7 GPa and 950.degree. for 30 min. Synchrotron x-ray powder diffraction data show the space group is P2<sub>1</sub>/n with a = 5.40361(5), b = 5.46152(5), c = 7.69288(7) .ANG., and .beta. = 90.034(3).degree.. By using disk samples of both polymorphs, the dielec. properties were measured as a function of temp. At ambient conditions, the **perovskite** form has a more than 1.5 fold enhancement in dielec. const. compared to the .alpha.-TlSbO<sub>3</sub> form while the molar volume and the mol. polarizability decrease.  
 ST sodium tin tellurate dielec property; crystal structure sodium tin tellurate  
 IT Crystal structure  
 Dielectric constant  
 (synthesis, structure, and dielec. properties of Na<sub>2</sub>SnTeO<sub>6</sub>)  
 IT 229469-04-9  
 RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)  
 (synthesis, structure, and dielec. properties of Na<sub>2</sub>SnTeO<sub>6</sub>)  
 RE.CNT 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 RE  
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 (21) Shannon, R; J Appl Phys 1993, V73, P348 CAPLUS  
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L8 ANSWER 149 OF 323 CAPLUS COPYRIGHT 2003 ACS on STN  
 AN 1996:663675 CAPLUS  
 DN 126:41762  
 TI High-pressure synthesis and thermal decomposition of LaCuO<sub>3</sub>  
 AU Karppinen, M.; Yamauchi, H.; Ito, T.; Suematsu, H.; Fukunaga, O.  
 CS Laboratory of Inorganic and Analytical Chemistry, Helsinki University of  
 Technology, Espoo, FIN-02150, Finland  
 SO Materials Science & Engineering, B: Solid-State Materials for Advanced  
 Technology (1996), B41(1), 59-62  
 CODEN: MSBTEK; ISSN: 0921-5107  
 PB Elsevier  
 DT Journal  
 LA English  
 CC 78-2 (Inorganic Chemicals and Reactions)  
 AB The high-pressure synthesis of the rhombohedral LaCuO<sub>3</sub> **perovskite**  
 was studied and optimized in terms of the applied **pressure** and  
**temp.**, the synthesis time and the amt. of the oxidizer.  
 Essentially single phase samples were obtained at temps. >1400.degree.  
 under an O pressure of 5 GPa. The high O pressures were generated using  
 excess amts. of KClO<sub>4</sub> as an external oxidizing agent. Upon heating under  
 ambient pressure the stoichiometric high-pressure form of LaCuO<sub>3</sub>-y loses O  
 yielding various O-deficient phases, and finally decompn. into La<sub>2</sub>CuO<sub>4</sub> and  
 CuO or Cu<sub>2</sub>O at .apprx.800.degree..  
 ST lanthanum cuprate prepn thermolysis high pressure; thermal decompn  
 lanthanum cuprate oxygen argon  
 IT Thermal decomposition  
 (of lanthanum cuprate in oxygen or argon)  
 IT Oxidizing agents  
 (potassium perchlorate in high pressure synthesis of lanthanum cuprate)  
 IT 1312-81-8, Lanthanum oxide (La<sub>2</sub>O<sub>3</sub>) 1317-38-0, Cupric oxide, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (for prepn. of lanthanum cuprate at high pressure)  
 IT 7447-40-7P, Potassium chloride (KCl), preparation  
 RL: BYP (Byproduct); PREP (Preparation)  
 (formation in high pressure synthesis of lanthanum cuprate)  
 IT 1317-39-1, Cuprous oxide, formation (nonpreparative) 12053-92-8, Copper  
 lanthanum oxide (CuLa<sub>2</sub>O<sub>4</sub>)  
 RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)  
 (formation in thermal decompn. of lanthanum cuprate)  
 IT 37249-72-2D, Copper lanthanum oxide (CuLaO<sub>3</sub>), oxygen-deficient  
 RL: FMU (Formation, unclassified); RCT (Reactant); FORM (Formation,  
 nonpreparative); RACT (Reactant or reagent)  
 (formation in thermal decompn. of lanthanum cuprate La<sub>2</sub>CuO<sub>4</sub>)  
 IT 37249-72-2P, Copper lanthanum oxide (CuLaO<sub>3</sub>)  
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (high-pressure synthesis and thermal decompn. of)  
 IT 7778-74-7, Potassium perchlorate (KClO<sub>4</sub>)  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (oxidant in high pressure synthesis of lanthanum cuprate)  
 IT 7440-37-1, Argon, uses 7782-44-7, Oxygen, uses  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (thermal decompn. of lanthanum cuprate in atm. of)

L8 ANSWER 269 OF 323 CAPLUS COPYRIGHT 2003 ACS on STN  
 AN 1986:601893 CAPLUS  
 DN 105:201893  
 TI Effects of high pressure on some lanthanide ruthenium oxide systems:  
 synthesis of the **perovskite** phase praseodymium ruthenium oxide  
 (PrRuO<sub>3</sub>)  
 AU Greatrex, R.; Hu, G.; Munro, D. C.  
 CS Dep. Inorg. Struct. Chem., Univ. Leeds, Leeds, LS2 9JT, UK  
 SO Materials Research Bulletin (1986), 21(7), 797-802  
 CODEN: MRBUAC; ISSN: 0025-5408  
 DT Journal  
 LA English  
 CC 78-2 (Inorganic Chemicals and Reactions)  
 Section cross-reference(s): 75, 76  
 AB The **perovskite** PrRuO<sub>3</sub> was prep'd. at pressures >2 GPa.  
 Lanthanide Ru oxide pyrochlores were studied at .ltoreq.5.5 GPa and  
 >1400.degree.. The Pr comp'd. shows partial transformation to the  
**perovskite** phase indicating some initial O deficiency. The PrRuO<sub>3</sub>  
**perovskite** exhibits elec. semicond. with activation energy  
 .apprx.0.17 eV.  
 ST elec cond praseodymium ruthenium oxide; lanthanide ruthenium oxide;  
 praseodymium ruthenium oxide **perovskite**  
 IT Crystal structure  
 (of praseodymium ruthenium oxide)  
 IT Electric conductivity and conduction  
 (of praseodymium ruthenium oxide with **perovskite**-type  
 structure)  
 IT Pyrochlore-type crystals  
 (rare earth ruthenium oxide, high-pressure effects on)  
 IT 105110-05-2P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (prepn. of, with **perovskite**-type structure at high pressures)  
 IT 37210-42-7P 61029-60-5P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (prepn. of, with pyrochlore-type structure at high pressures)  
 IT 61029-59-2P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (prepn. of, with pyrochlore-type structure with conversion to  
**perovskite**-type comp'd. at high **pressures** and  
**temps.**)  
 IT 12036-10-1  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with rare earth metal oxides and ruthenium at high  
**pressures** and **temps.**)  
 IT 1313-97-9 12037-29-5 12060-58-1  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with ruthenium and ruthenium dioxide at high  
**pressure** and **temp.**)  
 IT 7440-18-8, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with ruthenium dioxide and rare earth metal oxides at  
 high **pressures** and **temps.**)

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L8 ANSWER 308 OF 323 CAPLUS COPYRIGHT 2003 ACS on STN  
 AN 1973:532377 CAPLUS  
 DN 79:132377  
 TI High-pressure synthesis of **perovskite** type rare earth indium  
 oxide (RInO<sub>3</sub>) (R=europium, gadolinium, and dysprosium)  
 AU Sawamoto, Hiroshi  
 CS Dep. Earth Sci., Nagoya Univ., Nagoya, Japan  
 SO Japanese Journal of Applied Physics (1973), 12(9), 1432-8  
 CODEN: JJAPA5; ISSN: 0021-4922  
 DT Journal  
 LA English  
 CC 78-4 (Inorganic Chemicals and Reactions)  
 Section cross-reference(s): 68, 70, 72  
 AB The stability regions of RInO<sub>3</sub> (R = Eu, Gd, and Dy) with  
**perovskite** structure were studied from 700-1200.degree. at  
 pressures up to 90 kbar with the aid of the tetrahedral press. The stable  
 pressure (kbar) and temp. (.degree.C) of **perovskite** structure  
 were detd. as  $P > 9 + 0.07T$  for EuInO<sub>3</sub>,  $P > 20 + 0.07T$  for GdInO<sub>3</sub>, and  $P >$   
 $146 - 0.08T$  for DyInO<sub>3</sub>. At normal pressure, rare earth indium garnet  
 R<sub>3</sub>(R<sub>1</sub>-xIn<sub>1+x</sub>)In<sub>3</sub>O<sub>12</sub> was not synthesized, even though garnet solid solns.  
 were synthesized at high pressure. Temp. variations of magnetic  
 susceptibility for GdInO<sub>3</sub> and DyInO<sub>3</sub> follow Curie-Weiss law at  
 >150.degree.K, with the effective Bohr magnetons of 5.83 .+- 0.17 for  
 GdInO<sub>3</sub> and 9.03 .+- 0.05 for DyInO<sub>3</sub>.  
 ST indium rare earth oxide; europium indium oxide; gadolinium indium oxide;  
 dysprosium indium oxide; structure indium rare earth oxide; magnetism  
 indium rare earth oxide  
 IT Magnetic moment  
 (of rare earth indium oxides)  
 IT Crystal structure  
 (of rare earth indium oxides and indium oxide-rare earth oxide solid  
 solns.)  
 IT Dysprosium oxide (Dy<sub>2</sub>O<sub>3</sub>), solid soln. with indium oxide  
 Europium oxide (Eu<sub>2</sub>O<sub>3</sub>), solid soln. with indium oxide  
 Gadolinium oxide (Gd<sub>2</sub>O<sub>3</sub>), solid soln. with indium oxide  
 Indium oxide (In<sub>2</sub>O<sub>3</sub>), solid solns. with rare earth oxides  
 RL: PRP (Properties)  
 (crystal structure of)  
 IT 12292-63-6 12292-69-2 12292-84-1  
 RL: PRP (Properties)  
 (stability of, **pressure** and **temp.** effects on)

L8 ANSWER 309 OF 323 CAPLUS COPYRIGHT 2003 ACS on STN  
 AN 1973:458813 CAPLUS  
 DN 79:58813  
 TI Lead magnesium oxides prepared at high temperature and pressure  
 IN Hayashi, Hiroshi; Nishiyama, Goro; Nakayama, Noboru; Hasegawa, Kanemitsu;  
 Machida, Michihide  
 PA Agency of Industrial Sciences and Technology  
 SO Jpn. Kokai Tokkyo Koho, 2 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 NCL 15P0  
 CC 70-1 (Crystallization and Crystal Structure)  
 Section cross-reference(s): 71  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	JP 48005692	B4	19730124	JP 1971-39529	19710605
	JP 50029715		19750000	JP	

AB The crystal structure of Mg plumbate hydrate prep'd. from an aq. soln. of  
 an alkali metal plumbate, and an aq. soln. of a Mg salt, such as MgCl<sub>2</sub> or  
 Mg(NO<sub>3</sub>)<sub>2</sub> were altered by simultaneous heating and pressing (1000.degree.  
 and 50 kbars) for 20-60 min in a graphite tube to give MgPbO<sub>3</sub>. Materials  
 with **perovskite** (ABO<sub>3</sub>) structure, such as BaTiO<sub>3</sub>, SrTiO<sub>3</sub>,  
 CaTiO<sub>3</sub>, CdTiO<sub>3</sub>, and BaSnO<sub>3</sub> are useful as high-frequency dielec. and  
 ferroelec. materials. X-ray diffraction data are given.

ST lead magnesium oxide prepn; plumbate magnesium prepn

IT X-ray

(diffraction of, by lead magnesium oxide)

IT 50864-25-0P

RL: SPN (Synthetic preparation); PREP (Preparation)  
 (prepn. of, at high **pressure** and **temp.**)

Please forward to examiner. 466178  
Hargrave, Sheena

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T : Hargrave, Sheena  
Subject: FW: order

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From: Bos, Steven  
Sent: Friday, September 26, 2003 11:42 AM  
To: STIC-ILL  
Subject: order

\*\*\*\*CA 68:71834\*\*\*\*

DeVries et al  
High pressure synthesis ..  
J. of the American Ceramic Soc.  
1968  
51(2)  
72-5

09/931312

Steven Bos  
Art Unit 1754  
308-2537

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L8 ANSWER 319 OF 323 CAPLUS COPYRIGHT 2003 ACS on STN  
AN 1968:71834 CAPLUS  
DN 68:71834  
TI High-pressure synthesis of lead chromate (IV)  
AU DeVries, Robert C.; Roth, Walter Lester  
CS Gen. Elec. Co., Schenectady, NY, USA  
SO Journal of the American Ceramic Society (1968), 51(2), 72-5  
CODEN: JACTAW; ISSN: 0002-7820  
DT Journal  
LA English  
CC 57 (Ceramics)  
AB A new compd. with the compn.  $\text{PbCrO}_3$ , with Cr in the valence state of 4, was synthesized at high pressures above a **pressure-temp** . line extending from .apprx.50 kilobars at 750.degree. to 60 kilobars at 1450.degree..  $\text{PbCrO}_3$  can be quenched and retained at 1 atm. but decomp. on heating >275.degree. at the same pressure.  $\text{PbCrO}_3$  is considered to be an equil. phase at high pressures because it was synthesized from mixts. of  $\text{PbO}:\text{CrO}_2$  as well as from several other mixts. of compds. in the Pb-Cr-O system. The new phase has the cubic **perovskite** structure and is the only known compd. with  $\text{Cr}^{4+}$  in an octahedral site.  $\text{PbCrO}_3$  crystallizes primarily as black cubes which are often twinned on (111).  
ST PRESSURE HIGH PB CHROMATES 4; CHROMATES 4 PB; HIGH PRESSURE PB CHROMATES 4; LEAD CHROMATES 4  
IT 12218-29-0P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of)